Networking and Information Technology Research and Development Program and Budget

Helen M. Gigley, Ph.D.

Technical Liaison

National Coordination Office for

Information Technology Research and Development

June 23, 2003

Networking and Information Technology R&D Program

- Coordinated, focused long-term interagency R&D in information technologies
- Evolved from the Federal HPCC, CIC, NGI, and IT R&D programs
- $2 billion multi-agency NITRD Program
  - 12 agencies and departments coordinated via a "virtual agency"
  - National Coordination Office for Information Technology Research and Development provides the coordination/management

- The President's Information Technology Advisory Committee (PITAC)
  - assesses NITRD efforts and
  - makes IT research recommendations

Publications

- Annual publication of the Supplement to the President's Budget also known as the "BLUE BOOK", describes the NITRD Program

  http://www.itrd.gov/pubs/blue03/03BB-final.pdf

- President's Information Technology Advisory Committee (PITAC) Reports

  Transforming Access to Government Through Information Technology
  http://www.itrd.gov/pubs/pitac/pres-transgov-11sep00.pdf

  Developing Open Source Software to Advance High End Computing
  http://www.itrd.gov/pubs/pitac/pres-oss-11sep00.pdf

  Digital Libraries: Universal Access to Human Knowledge
  http://www.itrd.gov/pubs/pitac/pitac-dl-9feb01.pdf

  Transforming Health Care Through Information Technology
  http://www.itrd.gov/pubs/pitac/pitac-hc-9feb01.pdf

  Using Information Technology To Transform the Way We Learn
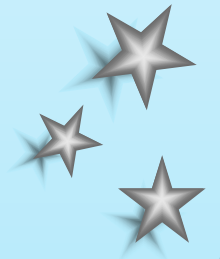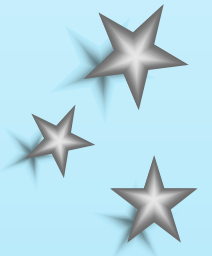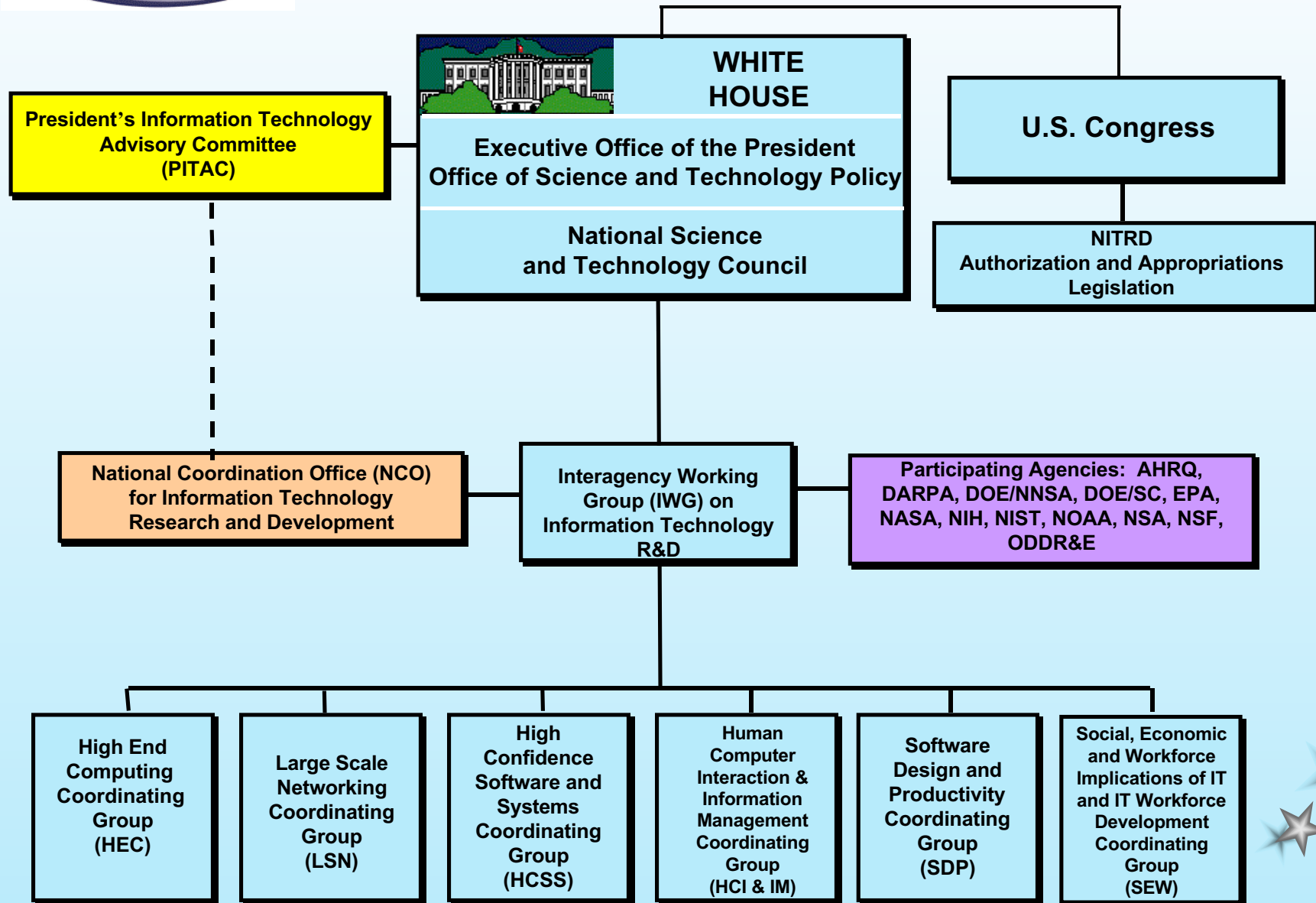 http://www.itrd.gov/pubs/pitac/pitac-tl-9feb01.pdf

Participating Agencies and Departments

- Agency for Health Research and Quality (AHRQ)
- Defense Advanced Research Projects Agency (DARPA)
- Department of Energy National Nuclear Security Administration (DOE/NNSA)
- Department of Energy Office of Science (DOE/SC)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)
- National Institutes of Health (NIH)
- National Institute of Standards and Technology (NIST)
- National Oceanic and Atmospheric Administration (NOAA)
- National Security Agency (NSA)
- National Science Foundation (NSF)
- Office of the Director of Defense Research and Engineering (ODDR&E)

NITRD Program Coordination

President's Information Technology Advisory Committee (PITAC)

WHITE HOUSE

Executive Office of the President Office of Science and Technology Policy

National Science and Technology Council

U.S. Congress

NITRD Authorization and Appropriations Legislation

National Coordination Office (NCO) for Information Technology Research and Development

Interagency Working Group (IWG) on Information Technology R&D

Participating Agencies: AHRQ, DARPA, DOE/NNSA, DOE/SC, EPA, NASA, NIH, NIST, NOAA, NSA, NSF, ODDR&E

High End Computing Coordinating Group (HEC)

Large Scale Networking Coordinating Group (LSN)

High Confidence Software and Systems Coordinating Group (HCSS)

Human Computer Interaction & Information Management Coordinating Group (HCI & IM)

Software Design and Productivity Coordinating Group (SDP)

Social, Economic and Workforce Implications of IT and IT Workforce Development Coordinating Group (SEW)

5

Agency NITRD Budgets (dollars in millions)

Agency	FY 2002 Estimate [1]	FY 2003 Request [1]	FY 2004 Proposed [2]
DOC (NIST, NOAA)	43	42	39
DoD (DARPA, NSA, ODDR&E)	306	297	461
DOE (NNSA, SC)	313	320	317
DHHS (AHRQ, NIH)	309	336	441
EPA	2	2	2
NASA	181	213	195
NSF	676	679	724
Totals	**1,830**	**1,889**	**2,179**

Source:

[1] FY 2003 Blue Book, "Strengthening National, Homeland, and Economic Security

[2] FY 2004 President's Budget
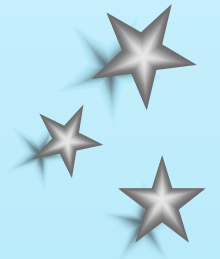
Program Component Areas (PCA) (dollars in millions FY 2003 Budget Request)

PCA	Participants	FY 2003 Request [1]
High End Computing (HEC)	DARPA, DOE/NNSA, DOE/SC, EPA, NASA, NIH, NIST, NOAA, NSA, NSF, ODDR&E	846.5
Large Scale Networking (LSN)	AHRQ, DARPA, DOE/NNSA, DOE/SC, NASA, NIH, NIST, NOAA, NSA, NSF, ODDR&E	317.0
High Confidence Software and Systems (HCSS)	NASA, NIH, NIST, NSA, NSF, ODDR&E	128.2
Human Computer Interaction and Information Management (HCI&IM)	AHRQ, DARPA, DOE/SC, NASA, NIH, NIST, NOAA, NSF, ODDR&E	309.2
Software Design and Productivity (SDP)	DARPA, DOE/NNSA, NASA, NIH, NIST,NOAA, NSF, ODDR&E	196.7
Social, Economic and Workforce Implications of IT and IT Workforce Development (SEW)	DOE/NNSA, DOE/SC, NASA, NIH, NSF	91.4
Totals		**1,889**

Source:

[1]FY 2003 Blue Book, "Strengthening National, Homeland, and Economic Security
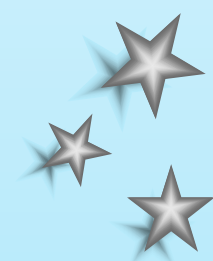
Priorities for the Coordinating Groups

- **High-End Computing (HEC)**
  - Long-range breakthroughs in HEC architectures and component technologies; computers capable of solving the most challenging computational problems
  - HEC infrastructure and applications resources for Federal and academic research

- **Large Scale Networking (LSN)**
  - Network security: overcoming impediments to effective cyber security (economic, infrastructure, technology)
  - Grid research and infrastructure
  - Advanced networking for data-intensive science, e.g., GriPhyN (Grid Physics Network)
  - Optical networking research

- **<u>High Confidence Software and Systems (HCSS)</u>**
  - Research in production, deployment, and certification of HCSS in mission-critical applications, i.e., affecting human life, critical infrastructure, or sensitive information
  - Activities fostering policymakers' awareness of HCSS role in homeland security and critical infrastructure protection

- **<u>Human Computer Interaction and Information Management (HCI&IM)</u>**
  - Human interactions with computers/systems
    - New device development
    - Natural-language science and technologies
    - Multimodal and multimode information
  - Human and system uses of information
    - Creation, access, and interaction
    - Managing information as an asset

- **<u>Software Design Productivity (SDP)</u>**
  - A science of software design and implementation management
    - Complexity, scale of system demands
    - Management tools for software-development
  - ***Report: Workshop on New Visions for Software Design and Productivity: Research and Applications, 2003***
    - http://www.itrd.gov/pubs/sdp_wrkshp_final.pdf
    - Current promising approaches and problems they address
    - Key research issue: tradeoffs in cost and performance
- **<u>Social, Economic and Workforce Implications of IT and IT Workforce Development (SEW)</u>**
  - Research in social, economic, and workforce (SEW) implications of new information technologies
  - Initiatives to improve communication between SEW researchers and policymakers, so research can inform decision-making

- **HCI & IM vision**

- **Enabling universal information processes**

  - Available to everyone regardless of their abilities

  - Available everywhere

  - Available at any time

- **Broadened interaction capabilities with this information**

  - Ability to provide information in many contexts

  - Ability to interact with this information using multiple devices to fulfill a user's needs

    - access to manipulation and

    - analysis to control

- **Comprehensive abilities to manage this vast information environment.**

HCI-IM Research Needs Report
research topics

- **Information Creation, Organization, Access and Use**
- **Managing Information as an Asset**
- **Interaction Research and Interaction Technologies**
- **Evaluation Methods and Metrics across HCI & IM**

For Further Information

Please contact us at:

nco@itrd.gov

Or visit us on the Web:

www.itrd.gov